



NASPI Update

October 18, 2022

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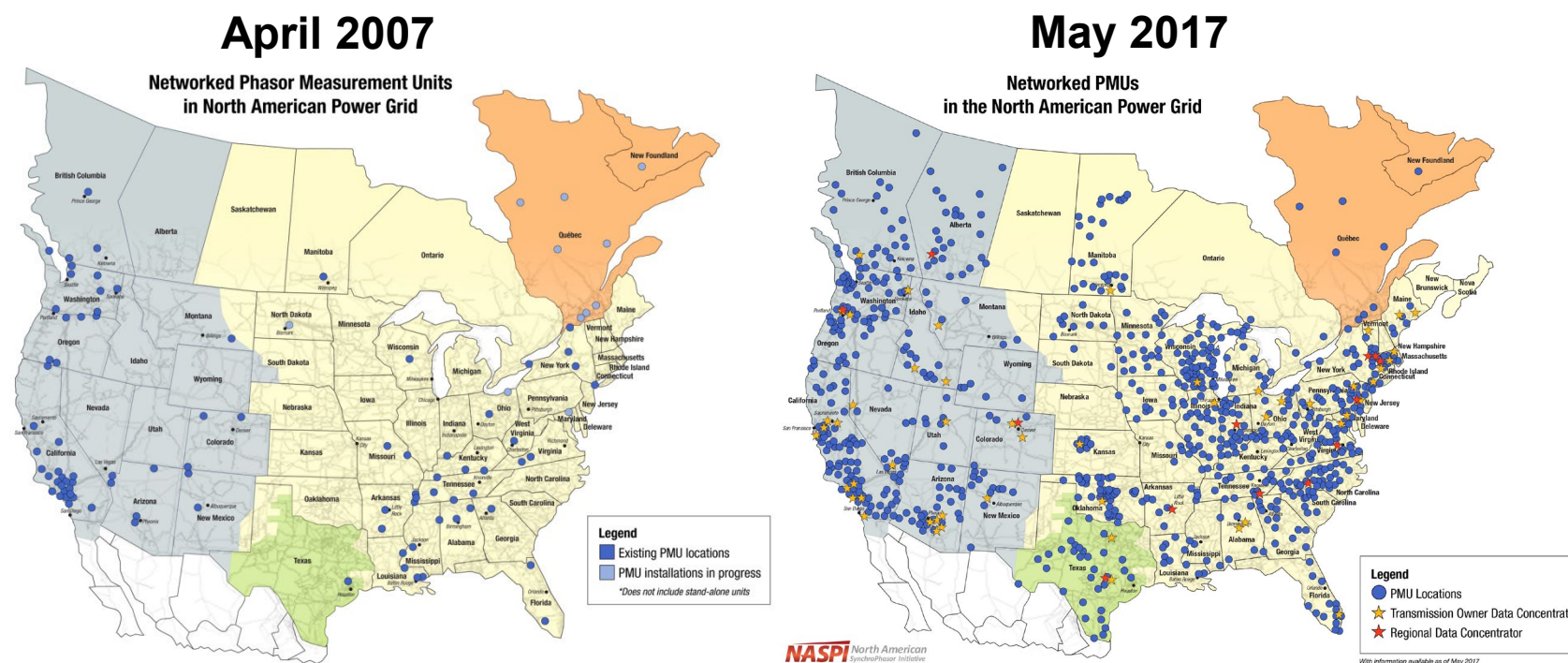


The North American SynchroPhasor Initiative (NASPI)

The U.S. Department of Energy (DOE) and EPRI are working together closely with industry to enable wide-area time-synchronized measurements that will enhance the reliability of the electric power grid through improved situational awareness and other applications.

Current and emerging areas of emphasis/focus for NASPI:

- Networking and communications technologies (advanced architectures)
- Statistical analysis and deep learning for extracting actionable information from large datasets
- High-resolution sensors to characterize the transient behavior of inverter-based resources and other fast-acting phenomena



“Better information supports better - and faster - decisions.”

NASPI Status Report

- Prior work group meeting – April 12-14, 2022 (virtual)
 - ✓ Big data analysis
 - ✓ Real-time synchrophasor applications (including control room applications)
 - ✓ Oscillation mitigation
 - ✓ Data networking, architecture, archiving
 - ✓ High-speed waveform measurements
- This work group meeting October 18-19, 2022 (hybrid)
 - ✓ Vendor show
 - ✓ Meta analysis to support big data analytics
 - ✓ Utility digital transformation and DOE prize panel
 - ✓ Distribution systems and edge computing
 - ✓ Locating generator outages
 - ✓ DOE projects in advanced sensing and analytics
 - ✓ GPS alternatives for timing in support of PMUs
 - ✓ Multi-function measurement devices application at grid edge
- Next work group meeting – April 4-6, 2023, Phoenix, AZ

Tuesday's Agenda – October 18

All Times Eastern Time Zone

Tuesday, October 18, 2022 (Eastern Time)	
8:00 - 9:00 am	Registration and coffee
9:00 - 9:05 am	Welcome, Introductions, and Logistics Review: Jeff Dagle (PNNL)
9:05 - 9:25 am	Keynote Speaker: Nelson Peeler, Senior Vice President, Transmission and Fuels Strategy and Policy, Duke Energy
9:25 – 9:45 am	NASPI Update – Jeff Dagle
	Session #1 – Meta Analysis to Support Big Data Analytics
9:45 – 10:05 am	FOA 1861 Meta Analysis – Shuchismita Biswas (PNNL)
10:05 – 10:20 am	Break – 15 minutes
	Session #2 Utility Digital Transformation and DOE Prize Panel The U.S. Department of Energy (DOE) Office of Electricity is launching the American-Made Digitizing Utilities Prize. This prize aims to connect utilities with interdisciplinary teams of software developers and data experts to facilitate transforming digital systems in the energy sector and data analytics for utilities. Digitizing Utilities Prize HeroX
10:20 – 12:00 pm	Session/Panel Moderator: Sandra Jenkins (U.S. DOE) <ul style="list-style-type: none"> • DOE Digitizing Utilities Prize - Sandra Jenkins • Utility Prize Partner – Kevin Jones (Dominion) • Utility Prize Partner – Tony Faris (BPA, remote) • Prize Structure and Rules – Sarah Gomach (NREL)
12:00 – 1:00 pm	Lunch

Tuesday's Agenda – October 18 continued

All Times Eastern Time Zone

	Session #3 – Synchrophasor Technology Updates
1:00 – 1:20 pm	Draft IEC TS62786-41: Distributed Energy Resources Connection with the Grid – Part 41: Requirements for Frequency Measurement Used to Control Distributed Energy Resources (DER) and loads – Allen Goldstein (NIST)
1:20 – 1:50 pm	Harmonizing Data Sources Across Utilities to Improve Analytics and Operations – Gilbert Chiang, Yi Xue (Palantir) (presenting remotely from PT Zone.)
	Session #4 - Technology Partner Flash talks (5 minutes talk)
1:50 – 2:40 pm	<ul style="list-style-type: none"> • Schweitzer Engineering Laboratories • Grid Protection Alliance • V&R Energy • <u>PingThings</u> • <u>Meinberg USA</u> • <u>Oscilloquartz</u> • SATEC • Microchip • GE • MathWorks
2:40 – 3:00 pm	Break

Tuesday's Agenda – October 18 continued

All Times Eastern Time Zone

	Session #5 - Task Team Breakout
3:00 – 6:00 pm	CRTT Business <ul style="list-style-type: none"> • Kevin Ostash (MHEB) – MHEB WAMS past, present, and future • Mike Nugent (SPP) - Data Quality Monitoring at SPP • Jim - NERC SMWG oscillation request process short overview • Review Mission Statement • Update the work plan
	DNMTT Business
	DisTT Business
	EATT Business <ul style="list-style-type: none"> • Summary of PPMV White Paper – Honggang Wang /Kaveri Mahapatra • PPMV GE contribution (non-linear optimization) – Kaveri Mahapatra • PPMV PNNL contribution (Kalman Filter) – Pavel Etingov • PPMV WSU contribution – Mani Venkatasubramanian • Grid Edge Technology Introduction (Eric Udren – Quanta Technologies) • EATT Business
	PRSVTT Business
6:00 - 8:00 pm	NASPI Reception, Vender Show, & Poster Session

Wednesday's Agenda – October 19

All Times Eastern Time Zone

Wednesday, October 19, 2022 (Eastern Time)	
8:00 - 9:00 am	Registration and coffee
9:00 - 9:05 am	Welcome, Introductions, and Logistics Review: Jeff Dagle (PNNL)
	Session #6 - NASPI Task Team Updates (10 minutes each)
9:05 – 10:00 am	<ul style="list-style-type: none"> • CRSTT Update • DNMTT Update • DisTT Update • EATT Update • PRSVTT Update
	Session #7 - Distribution Systems and Edge Computing – Synchrophasor Value and Applications
10:00 – 11:30 am	<ul style="list-style-type: none"> • Distribution System Data Collection and Edge Computing Insights and Synchrophasor-Based Use Cases – Eric Udren (Quanta-Technology) • Digital Twins for Distribution Transformers and Overhead Conductors to Improve Quality of Service Under Faults and Fire Risk – Panos Moutis (CMU) • ComEd Edge Computing Sensors – Shikhar Pandey (ComEd)
11:30 - 11:45 am	Break – 15 minutes

Wednesday's Agenda – October 19 continued

All Times Eastern Time Zone

	Session #8 - Organization Reports from NASPI-Related Activities (10 minutes each)
11:45 – 12:25 pm	<ul style="list-style-type: none"> • NERC Synchronized Measurement Working Group (SMWG) update – Tim Fritch (Tennessee Valley Authority) • EIDSN Update - Kent Simendinger (EIDSN) • IEEE Update - Allen Goldstein (NIST)
12:25 – 1:30 pm	Lunch
	Session #9 – Locating Generator Outages
1:30 – 1:50 pm	Generation Loss Source Location for Grid Operations with Synchrophasor Data - Jared Bestebreur (Schweitzer Engineering Laboratories, Inc.)
	Session #10 - DOE projects in Advanced Sensing and Analytics Tom King/Eric Andersen
1:50 – 3:10 pm	<ul style="list-style-type: none"> • Signature Library - Jamie Lian (ORNL) and Jim Follum (PNNL) • Data Integrity and Data Quality - James Ogle (PNNL) • Grid Sweeper - Alex McEachern (McEachern Laboratories Inc.) • Incipient Failure Detection/Sensor Deployment in Power Substation - Yarom Polsky (ORNL)
3:10 – 3:25 pm	Break – 15 minutes

Wednesday's Agenda – October 19 continued

All Times Eastern Time Zone

	Session #11 – GPS Alternatives for Timing in support of PMUs
3:25 – 4:05 pm	<ul style="list-style-type: none">• Recent Developments in Precise Distributed Time – Terry Jones (ORNL)• IEEE P1952 Resilient Positioning, Navigation, and Timing User Equipment Working Group - Jeff Dagle (PNNL)
	Session #12 – Multi-Function Measurement Devices Applications at Grid Edge
4:05 – 4:45 pm	<ul style="list-style-type: none">• Fusion of Synchrophasor and Waveform Data for Dynamic Performance Assessment and Root Cause Analysis - Kevin Jones (Dominion)• SIMPLE – A Multi-Function Grid Edge Device with PMU and Point-on-Wave Streaming Capability to Support Multiple Advanced Distribution Use-Cases - Niroj Gurung (ComEd)
4:45 – 5:00 pm	Closing remarks – Jeff Dagle
5:00 pm	Adjourn

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NASPI 2022 Webinar Series

- January 26 – Synchronized Waveforms – A Frontier of Data-Based Power System and Apparatus Monitoring, Protection, and Control - Wilsun Xu (U. Alberta)
- February 23 – Applications of Time Synchronized Measurements in the Electric Grid - Mohini Bariya (UC Berkeley)
- March 30 - Impacts of Forced Oscillations - Aftab Alam and Urmila Agrawal (CAISO)
- June 29 - Building a Resilient Distribution Grid - Dan Dietmeyer and Charlie Cerezo (SDG&E)
- July 27 - Developing the future energy systems workforce: Perspectives from the industry and academia – S. Biswas (PNNL), A. Bose (WSU), Y. Liu (UTK), S. Meliopoulis (Ga-Tech), K. Jones (Dominion)
- August 31 - Machine Learning Based State Estimation for Transmission and Distribution Grids – Evangelos Farantatos (EPRI) and Anamitra Pal (ASU)

All webinar materials are available at www.naspi.org/webinars

2022 NASPI Workshops

April 11, 2022

Monitoring, Analysis and Mitigation of Oscillations and Inverter Based Resource Impacts (176 attended)

September 28, 2022

NASPI-NERC SMWG Joint Workshop: Telemetry for Inverter Based Resource disturbance monitoring and analysis (207 attended)

The NASPI Technical Task Teams

- Control Room Solutions
 - Jim Kleitsch
 - Cody Parker
- Data & Network Management
 - Dan Brancaccio
- Distribution
 - Dan Dietmeyer
 - Panos Moutis
- Engineering Analysis
 - Evangelos Farantatos
 - Matthew Rhodes
- Performance Requirements, Standards & Verification
 - Jim O'Brien
 - Farnoosh Rahmatian
- Email naspi@pnnl.gov if you would like to be part of a task team.

NASPI Path Forward

- Continue to support and liaison with industry
 - Various IEEE Standards activities
 - North American Electric Reliability Corporation
 - ✓ Synchronized Measurement Working Group
 - Western Electricity Coordinating Council
 - ✓ Joint Synchronized Information Subcommittee
- Anticipating no substantial structural changes to the NASPI leadership team, industry-led task teams, or meeting tempo (plan to resume twice per year)
 - Maintain approximately equal representation among utilities, vendors, and academia, which has been a unique attribute and key value proposition for NASPI
- Current and emerging areas of emphasis/focus for NASPI:
 - Networking and communications technologies (advanced architectures)
 - Statistical analysis and deep learning for extracting actionable information from large datasets
 - High-resolution sensors to characterize the transient behavior of inverter-based resources and other fast-acting phenomena



Save the Date

The next NASPI Work Group Meeting will be held:

April 4-6, 2023

Phoenix, AZ



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North American SynchroPhasor Initiative

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Thank you

